Data Manipulation

Program Execution

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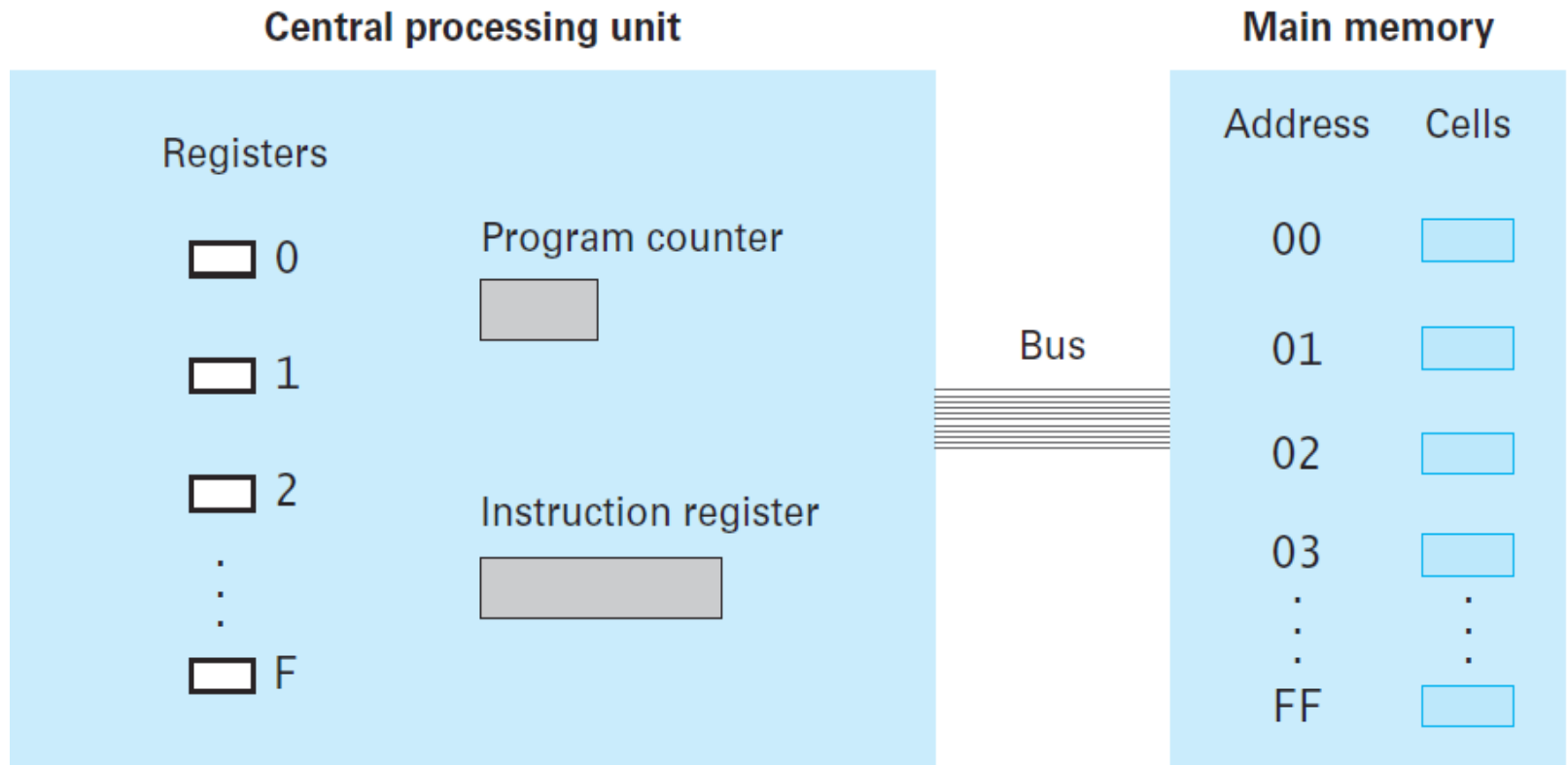
Program Execution

Machine Instruction

- ✓ From main memory to CPU
- ✓ Each instruction is decoded and obeyed.
- ✓ The order is as the instructions are stored in memory otherwise specified by a JUMP.

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Program Execution

Special Purpose Registers

- ✓ **Instruction Register:** Holding instruction being executed now.
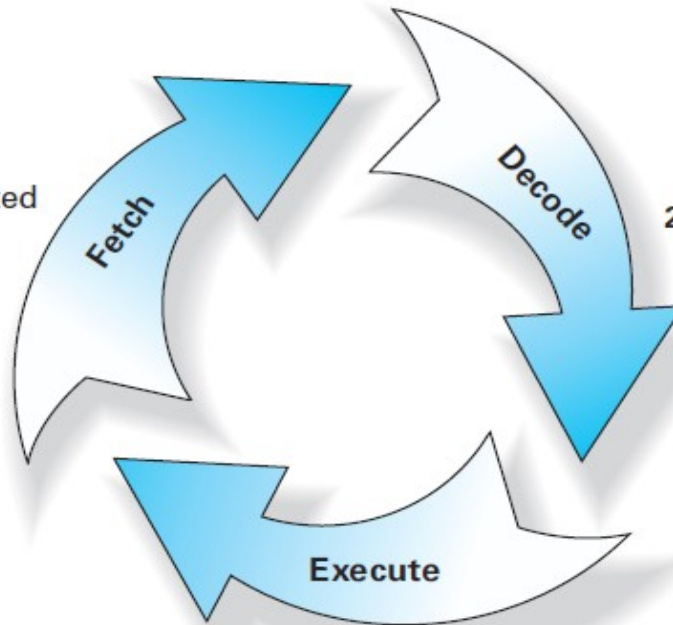- ✓ **Program Counter:** contains the address of next instruction to be executed.

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Program Execution

Central processing unit

Registers

☐ 0   Program counter

☐ 1

☐ 2

.
.
.

☐ F   Instruction register

Bus

Main memory

Address	Cells
00	☐
01	☐
02	☐
03	☐
. . .	. . .
FF	☐

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Program Execution

Machine Cycle

1. Retrieve the next instruction from memory (as indicated by the program counter) and then increment the program counter.

Fetch

Decode

2. Decode the bit pattern in the instruction register.

Execute

3. Perform the action required by the instruction in the instruction register.

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Summary

Program Execution

- ✓ Special purpose register
- ✓ Machine Cycle

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